

# Town of Garner **Planting Manual**

Prepared by the  
Planning Department

1999

There are many people instrumental in the making of this manual. The Planning Department wishes to thank Laura Brewer in the Engineering Department with the City of Charlotte, Joe Morris and Lynn Raker in the Planning Department with the City of Salisbury, Stuart Warren in the Horticulture Department at North Carolina State University, Bill Wilder with the North Carolina Association of Nurserymen, Ed Frederick in the Inspections Department with the City of Raleigh, Carl Matyac in the Master Gardener Program with the City of Raleigh, members of the Garner Planning and Appearance Commission, and the citizens of Garner, North Carolina.

Amanda H. Bosch, Project Manager



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## I. Introduction:

The guidelines included in this Manual apply to all new development, governed by the permitting process defined in Section 46 of the Town of Garner Land Use Ordinance, and change in use development defined in Section 152. Any property developed or substantially changed under a permit approved by the Town of Garner is subject to the planting guidelines of this Manual. **Existing residential, office, commercial, and industrial properties are not required to meet the standards described below.**

This Manual is a compilation of the latest accepted horticultural practices. It is meant as a reference to be used by landscape contractors, gardeners, and do-it-yourselfers to assure that installed landscapes thrive once planted. It contains definitions, text descriptions, and graphic examples. Sections within this manual provide information on: plant and lawn installations; tree protection and preservation, and care during construction; suggested species per plant category; the Planning Department's Landscape/Appearance Inspection Report; and a resource list of supporting publications and organizations/contact persons.

Much of the information contained in this Manual may already be included in the Site Plan package approved by the Town of Garner. Where information is provided in this Manual and not addressed in the approved package or landscape contract, all those who install plants will use the standards in this Manual. **Where there are discrepancies, it is the responsibility of the installer to bring them to the attention of Planning Staff immediately. The Urban Design Specialist in the Planning Department will determine the standard(s) to follow.**

This Manual is the guide Staff uses to assess landscape installations. All those who install landscape plantings subject to Planning Department approval towards a Certificate of Occupancy or landscape compliance are expected to follow these guidelines in the absence of other specific information in the approved Site Plan package or landscape contract. **Failure to follow these guidelines can result in Planning Staff's refusal to accept the work.**

## II. How to Use This Manual:

This manual contains four elements designed to be used interchangeably. The core of the manual is the text description; the three other elements - definitions, figures/tables, and resource support - are tools to be used to better understand the text.

The definitions are provided at the beginning of the manual; the author suggests referring to these often so the user can get the most use out of this manual.

Much of the text is illustrated in accompanying figures. There are references in the text to those figures which help explain the text.

The tables included in Plant Categories provide the designer with lists of plant choices in each of the



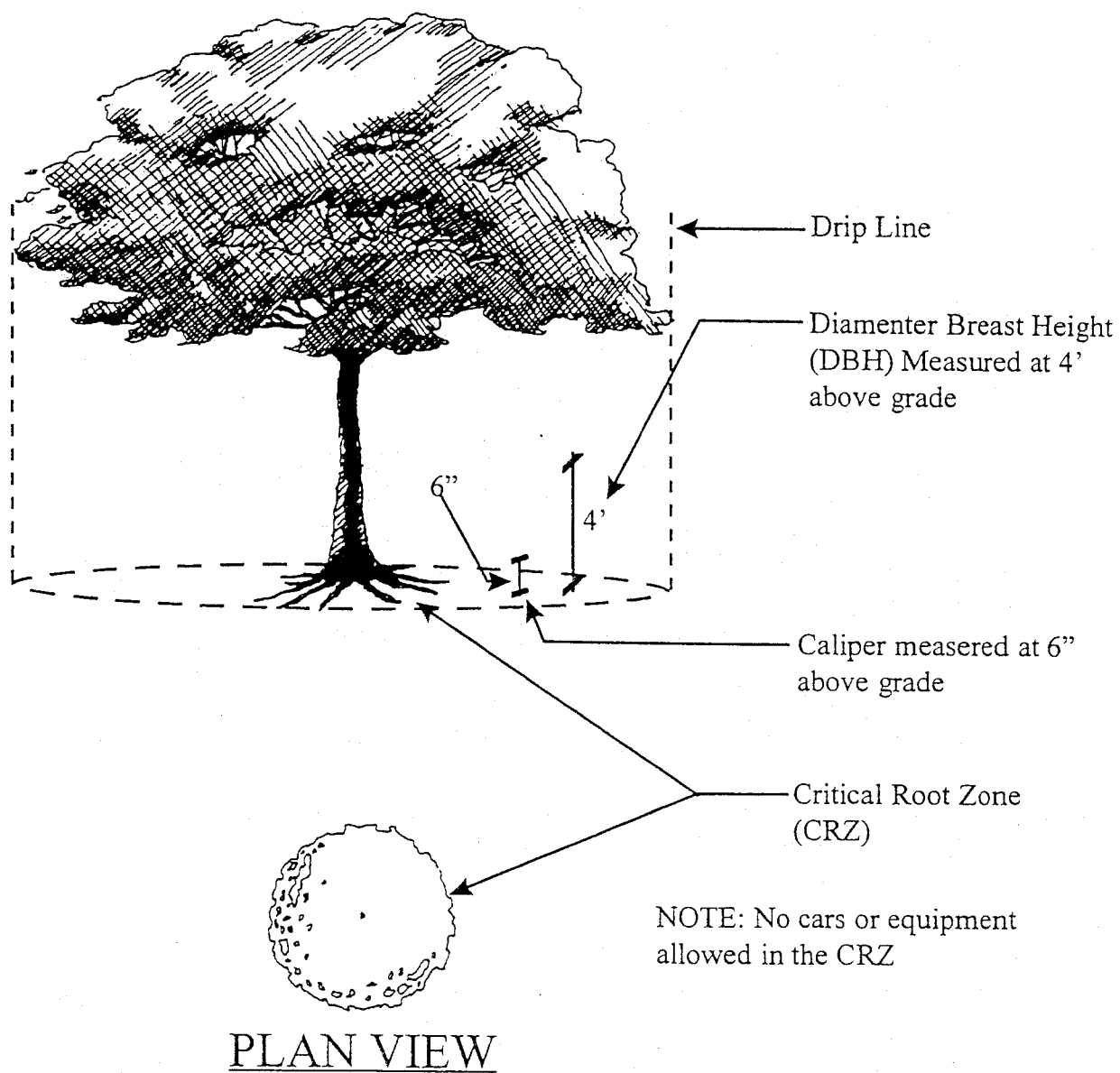


Figure 1: Critical Root Zone / Drip Line

three categories of plants: shade tree, ornamental tree, and shrub. The Landscape/Appearance Inspection Report is included so that each installer is aware of those items most often cited as violations.

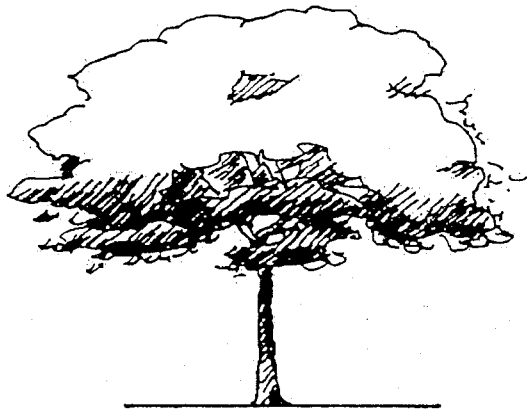
The information in this manual is extracted from many persons and publications. At the beginning of many sections or subsections the text refers to specific publication(s). The last section in the manual, the Resource List, gives cost and availability information for publications, and contact persons/phone numbers for organizations.

**Any comments on the manual's organization, layout, or content will be greatly appreciated. Please direct questions/concerns to the Urban Design Specialist in the Planning Department, Town of Garner at (919) 772-4688.**

### III. Definitions:

- ***Annuals***: flowering plants, usually 6 to 18 inches tall, used to provide seasonal color and interest. Root stock dies in winter, therefore annuals need replanting each growing season. Often referred to as bedding plants.
- ***Caliper***: standard trunk diameter measurement for nursery grown stock taken six inches above the ground for trees up to and including four (4) inch caliper size, and taken twelve inches above the ground for trunk diameters larger than four (4) inches. *See Figure 1.*
- ***Canopy***: the branched portion of a tree or forest. *See Figure 1.*
- ***Central Leader***: primary or terminal shoot, i.e. the trunk of a tree. *See Figure 6.*
- ***Critical Root Zone (CRZ)***: a circular region measured outward from a tree trunk representing the area where roots must be maintained for the tree's survival. This CRZ is one foot radial distance for every inch of tree DBH, minimum of eight feet. *See Figure 1.*
- ***Cut***: the exposed wood area that remains after a branch has been removed.
- ***DBH or Diameter at Breast Height***: tree trunk diameter for existing trees measured in inches at a height of 4.5 feet above the ground. *See Figure 1.*
- ***Deciduous***: those plants that annually lose their leaves.
- ***Dormant***: a condition of non-active plant growth. Deciduous trees and shrubs are considered to be dormant from the time their leaves fall until new foliage begins to reappear.

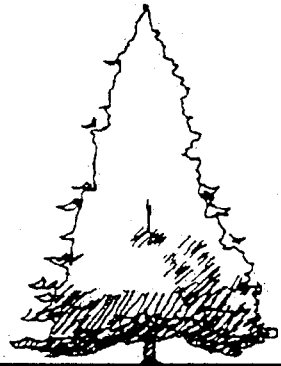
- **Drip Line:** a vertical line, extending from the outermost edge of the tree canopy or shrub branches, to the ground. *See Figure 1.*
- **Evergreen:** those plants that retain foliage throughout the year.
- **Groundcovers:** mature at 6 to 18 inches, usually evergreen, spreading growth form, used to control erosion and pedestrian traffic. *See Figure 2.*
- **Improper pruning.** *For deciduous trees:* the removal of the central leader, or the shortening of branch ends. Staff considers symmetrical pruning of the end branches of Crapemyrtles a particularly offensive violation. *For deciduous shrubs:* removal of more than a third of healthy growth. *For evergreen trees and shrubs:* removal of more than a third of growth. *For all trees and shrubs:* use of unsharp tools leaving uneven or broken cuts or wounds. *See Figure 7.*
- **Inch for inch Replacement:** replacing existing plants with an equal total caliper of new like plants. For example, if two existing 6" Willow Oaks are removed, they must be replaced with four new 3" caliper deciduous hardwoods, or five 2 ½" deciduous hardwoods. The smallest replacement tree allowed is 2 ½"; the smallest replacement shrub is 5 gallon at 3' tall. All replacement stock must be specimen quality.
- **Lifting or Limbing up:** the removal of lower branches for under-clearance. *See Figure 7.*
- **Ornamental Grasses:** annual or perennial, seasonal growth to six (6) feet in height, used to provide landscape interest, perhaps for screening views, or for pedestrian control. Are typically low water users. *See Figure 2.*
- **Perennials:** flowering plants whose root stock survives the winter. Used to provide color/textural interest, and control pedestrian traffic, seldom used for screening.
- **Plan of Action:** a written/graphic document containing at least a Replacement Planting Plan, an estimated date of completion of the required plant installation, and an agreed-on date for the Urban Design Specialist to re-inspect the site.
- **Pruning:** the removal of dead or diseased, live but interfering, objectionable, and/or weak branches. *See Figure 6.*
- **Replacement Planting Plan:** a landscape plan showing types, numbers, sizes, and locations of plants to be planted as replacements for dead, improperly pruned, or diseased plant material. Such material is identified in writing by the Urban Design Specialist as needing replacement, and is included as an attachment to the Landscape/Appearance Inspection Report.



Tree, Shade



Tree, Ornamental



Tree, Screening



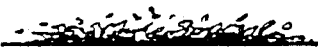
Shrub, Large



Shrub, Medium



Shrub, Low



Groundcover



Ornamental Grass

Figure 2: Landscape Plants by Type

- **Scars or Injuries:** natural or man-made lesions of the bark in which wood is exposed.
- **Shrubs, Large:** may be evergreen or deciduous, mature at 6 to 12 feet in height, and have branches to the ground. Used as accent, focus, or if evergreen, as screening material. *See Figure 2.*
- **Shrubs, Medium:** usually evergreen, mature at 3 to 6 feet in height, most often used to screen views seen by the traveling public. *See Figure 2.*
- **Shrubs, Low:** may be evergreen or deciduous, mature at 1 to 3 feet in height, the only shrub allowed inside sight triangles; low shrubs provide little or no screening, and are used to prevent erosion, control pedestrian traffic, and provide seasonal interest. *See Figure 2.*
- **Tree, Ornamental:** a small to medium tree, to a height of 15 to 35 feet at maturity, planted for aesthetic purposes such as colorful flower, interesting bark, or fall foliage. *See Figure 2.*
- **Tree, Shade:** a large tree growing to over 35 feet in height at maturity, usually deciduous, planted to provide a canopy of shade. *See Figure 2.*
- **Tree, Screening:** some medium and small evergreen trees, from 12 to 25 feet in height, which, because used to screen views, must keep branches to the ground. Examples are Leyland Cypress, pine, holly, or vertical junipers. *See Figure 2.*

#### IV. Requirements for Successful Groundcover, Shrub, and Tree Installations:

##### A. Plant Material:

Protect all plants at all times. Protect plants from sun and/or drying winds. Plants that cannot be planted immediately upon delivery to the site must be kept in the shade or covered with burlap to prevent **sun scorch**. These plants need to be **well watered**. Plants which remain unplanted for longer than one day must be **heeled in** - i.e. covered with wet compost, soil, or other acceptable material - and their root ball kept moist by watering. **No plant may remain unplanted on site longer than three (3) days.**

To protect surrounding turf that may be damaged from being driven over and upon which soil may be temporarily piled, **cover with** a tarp or sheets of **plywood**. Provide **tree protection fencing** to protect any existing **trees**, shrubbery, and beds in this area. See *Figure 8*.

Supply all plants as specified in the Plant List as shown on the approved Site Plan. Determine from the plan the **quantities** of each species required. If a discrepancy exists between the number of plants specified in the Plant List and the graphic representation on the plan, the installer is to use the number **graphically represented on the plan**. Plants must be typical of their species and variety, have normal growth habit, have well-developed branching, be densely foliated, and have vigorous fibrous/feeder roots. Size of plants, spread of roots, and size of root ball must be in accordance with the **American Standard for Nursery Stock** (1996 or most current edition). **Plants** of each particular variety **must be uniform** in size, density, and configuration.

**Container plants** must have a root system **dense enough to hold the soil** intact when removed from the container. The root system, however, must **not be root bound**, or so dense in mass that it is excessively intertwined or has a circular growth pattern.

Balled and burlapped (**B&B**) **plants** must be nursery grown, and dug within three (3) days of transplanting. Nursery grown stock must have been transplanted or root pruned **at least once in the past three (3) years**. The burlap used to secure the ball must be untreated and biodegradable. There can be **no more than one inch (1") of fill** over the original roots. B&B plants must have **firm balls of earth** in which the plant has been growing, and of a diameter not less than specified in the American Standard for Nursery Stock, Table 5: Ball Sizes for Nursery Grown Trees.

**All new trees** must have **straight trunks with an intact single central leader**, unless a multi-stem tree is specified. Trees will not be accepted which have had their branches shortened, leaders cut, or have damaged leaders which require cutting. Unless otherwise specified, shade trees shall not have branches within six (6') feet of the top of the root ball.

## **B. Soil Preparation:**

Create plant beds the size and location shown on the approved Site Plan. All groundcovers and container shrubs must be planted in a shrub bed; B& B material may be planted in individual planting holes. The planting bed or hole must be **wide enough to accommodate all roots without crowding**, and must contain nutrient rich soil. See NC Cooperative Extension Service bulletin Planting Techniques for Trees and Shrubs for clarification of many of the following points. *Also see Figures 3 and 4.*

In order to ready the beds for planting, prepare the soil by taking the following steps:

1. **Remove** all vegetation and topsoil from the **top three (3") inches** of the planting area for both planting beds and plant holes. Remove unwanted vegetation from the site; stockpile topsoil on site for future use or remove from the site if specifically stated in the approved Site Plan package.

2. **Dig all shrub beds 2 to 3 times the width of the root mass and all tree planting holes 1 ½ to 2 times the width of the root ball** with a minimum nine (9) inches on each side of the mass or ball. *See Figure 3*
3. **Install** a sufficient quantity of **planting mix to replace the removed topsoil**, and to achieve positive drainage at a minimum of 1.5% slope.
  - a. The replacement soil shall be the following **Planting Mix**: 10% - 30% sterile, well pulverized red clay; 30% - 50% silt; 30% - 45% coarse sand, 1.0 mm to 0.5 mm in diameter; minimum 5% organic material such as completely decomposed compost/humus. The acidity range of the Plant Mix shall be ph 5.5 to ph 7.0. The planting mix shall have the following nutrients at the specified percent base saturation: calcium at 55% to 80%, magnesium at 10% to 30%, potassium at 5% to 8%.
  - b. If the quality of planting mix seems questionable to Planning Staff, Staff may require the results of a soil test for analysis. *See Resource List for availability of Soil Sampling for Lawns and Gardens.*
4. If no replacement planting mix is used, there is an **acceptable alternative soil preparation**. Thoroughly pulverize the soil, minus the sod, removed from the planting hole or plant bed. Amend with lime and fertilizer at the rates specified in Subsection D below. Mix with shredded bark mulch, leaf litter, or gypsum to create an adequate amount to backfill bed/hole.
5. **Till all plant beds to a depth of 8"**. *See Figure 3*. Incorporate **lime and fertilizer in the top 4" - 6"** of the soil using a rototiller. *See Subsection D for rates of application.*
6. Dig a **4" V-cut trench** at the perimeter of all plant beds and adjacent to concrete walks, curbs, and grassed areas. *See Figure 4*. Dig the trench to a consistent and uniform depth and width.

### C. Plant Installation:

See NC Cooperative Extension Service bulletin Planting Techniques for Trees and Shrubs for clarification of the following points. *See Figures 3 and 4.*

1. **Soak** with water all **container plants** before removing them from their containers to keep the plant moist and healthy during the planting process.
2. Remove groundcover and shrubbery from their containers. If their root balls are pot bound, **scarify the ball** before installation.

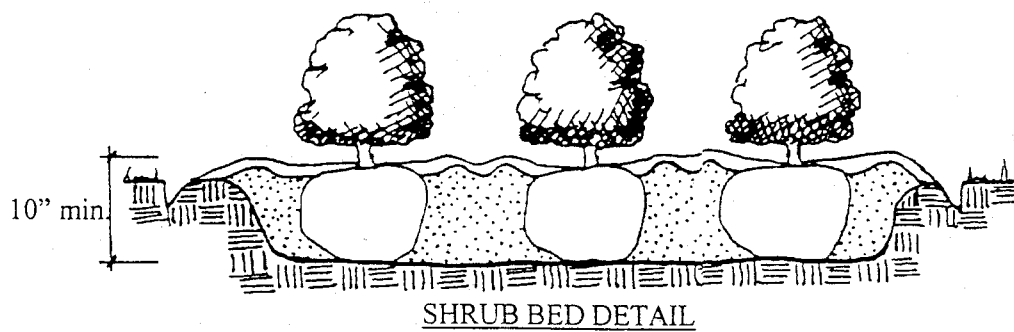
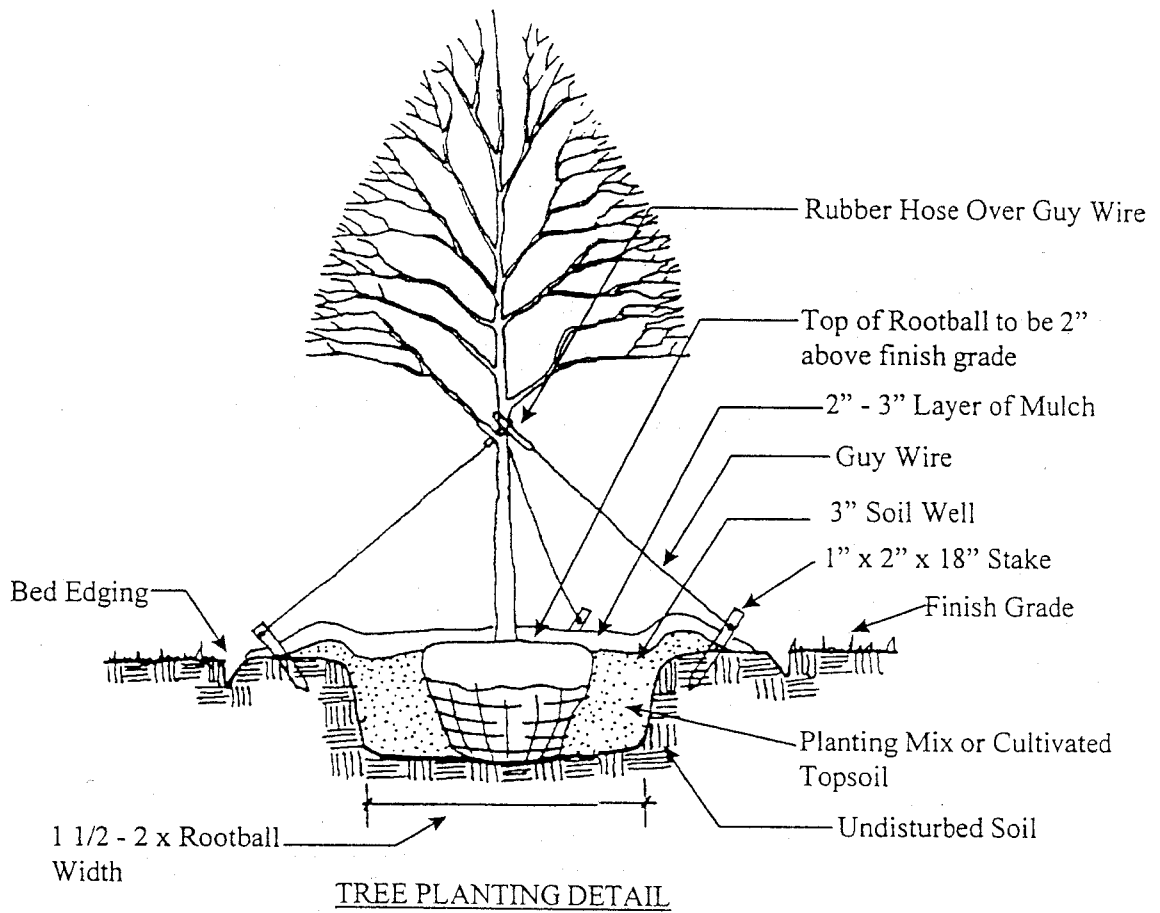


Figure 3: Planting Details



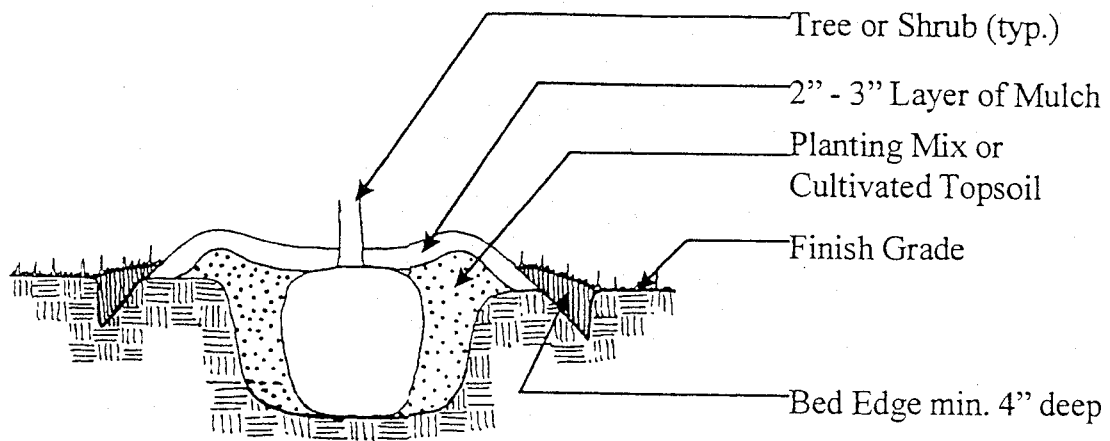
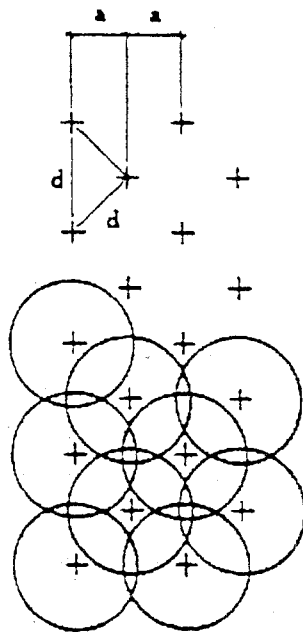


Figure 4: Bed Edging



d	a	# of Plants	Area Unit
4"	3.46"	10.39	per 1 SF
6"	5.20"	4.62	
8"	6.93"	2.60	
10"	8.66"	1.66	
12"	10.39"	1.15	
15"	12.99"	7.39	per 10 SF
18"	15.59"	5.13	
24"	20.78"	2.89	
30"	25.98"	1.85	
36"	31.18"	1.28	
4'-0	3.46'	7.22	per 100 SF
5'-0	4.33'	4.62	
6'-0	5.20'	3.21	
8'-0	6.93'	1.80	
10'-0	8.66'	1.15	

The illustration and table give planting information for shrub and ground cover massings. These calculations may also be used in figuring the arrangement of a staggered hedgerow.

Figure 5: Groundcover Spacing

3. Set plants **upright, plumb, and oriented to provide the best appearance** and relationship to the viewer.
4. Set shrubs and trees **2" - 3" above finished grade**. Do not place backfill soil **on top of the root ball, or up the stems or trunks** of plant material.
5. Backfill around the root ball being careful not to pack tightly. Form a **2" high collar of soil around the drip zone** of individual shrubs in all **unirrigated** planting beds.
6. Take extra care to adequately backfill B&B plants. Backfill and compact the bottom third (1/3) of the root ball. **Cut away the ball ties, the top two thirds (2/3) of the wire basket, and the exposed burlap**. Do not remove the burlap from under the root ball. Backfill one half (1/2) the remaining hole with the specified planting mix, and water thoroughly. Backfill the rest of the hole with the specified planting mix, firm down to eliminate air packets but **do not pack tightly**. Build a **collar of soil 4" in height around the edge of the root ball** to form a basin for holding water. Form the bottom of the basin at surrounding finish grade.
7. Dig a **4" V-cut trench** at the perimeter of all plant beds and adjacent to concrete walks, curbs, and grassed areas. Dig the trench to a consistent and uniform depth and width.
8. Mulch with 2" - 3" clean bark mulch.
9. Water all plants immediately after planting. See Subsection F for more on watering.

#### D. Fertilizing and Liming Groundcovers, Shrubs, and Trees:

See NC Cooperative Extension Service bulletin Fertilizer Recommendations and Techniques to Maintain Landscapes and Protect Water Quality for clarification of the following points.

1. **Incorporate lime and fertilizer uniformly in the top 6" - 8" of the soil using a rototiller.**
2. As a source of lime use ground (**dolomitic**) limestone containing less than 85% total carbonates. In the absence of a soil test apply lime at a rate of 75 pounds per 1,000 square feet.
3. Use a fertilizer having **50% water insoluble nitrogen**, and a maximum 5% chlorine content.

4. The fertilizer analysis for **Groundcovers and Shrubs** shall be either 12-6-6 or 14-7-7 and shall be applied at a rate of 2 pounds per 100 square feet.
5. **For trees**, apply fertilizer at a rate of 0.16 lb to 0.20 lb nitrogen per inch caliper of tree. Use a Urea Formaldehyde or similar **slow release fertilizer** source. Two possible fertilizer analyses are either 1 cup 31-7-7 analysis fertilizer or 2 cups 12-6-6 analysis fertilizer per inch caliper.

Use the following fertilizer amounts for trees for each fertilizer analysis:

For a 1 ½" caliper tree:	1 ½ cups 31-7-7	or	3 cups 12-6-6
For a 2" caliper tree:	2 cups 31-7-7	or	4 cups 12-6-6
For a 2 ½" caliper tree:	2 ½ cups 31-7-7	or	5 cups 12-6-6
For a 3" caliper tree:	3 cups 31-7-7	or	6 cups 12-6-6
For a 3 ½" caliper tree:	3 ½ cups 31-7-7	or	7 cups 12-6-6
For a 4" caliper tree:	4 cups 31-7-7	or	8 cups 12-6-6
For a 5" caliper tree:	5 cups 31-7-7	or	10 cups 12-6-6
For a 6" caliper tree:	6 cups 31-7-7	or	12 cups 12-6-6

6. In addition to the nitrogen, apply **phosphorous** at a rate of 0.05 lb per inch caliper, and **potassium** at a rate of 0.05 lb per inch caliper. These rates are reflected in the fertilizer choices and rates listed in #5 above.
7. Apply granulated fertilizer as a **top dressing within the drip line** of each individual plant. Immediately remove any fertilizer that comes in contact with the stem, trunk or foliage of a plant. Work the fertilizer into the **top two (2) inches of the soil**.
8. Apply fertilizer and work into the soil **before installing mulch**.

#### E. Watering Groundcovers, Shrubs, and Trees:

See NC Cooperative Extension Service bulletin Wise Water Use in Landscaping for clarification of the following points.

1. Be sure water used is **free** from oil, acids, alkalis, salts or any other substance that is **toxic or harmful to vegetation**.
2. Water container plants thoroughly **before removing from their containers** to keep the plant moist and healthy during the planting process.
3. Water all plants **immediately after planting**. To water thoroughly, saturate all backfill in beds during the **same day of planting**. Water only by open-end hose at **very low pressure** to avoid erosion of soil, breaking the soil collars surrounding each plant, and/or injury to roots. Make sure plants are **vertical** and the top of the **root ball is not below existing grade** once they are watered and fully settled.

#### F. Herbicide Application for Groundcovers, Shrubs, and Trees:

1. **Before mulching** trees and shrubs apply a pre-emergent herbicide to the planting beds and tree wells.
2. Use the herbicide **Dacthal 75 WP, or equivalent**, applied to the surface at a rate of 10 pounds per acre or 1 pound per 5000 square feet.
3. Apply a second application at the same rate **one month after mulching**.

#### G. Mulching Groundcovers, Shrubs, and Trees:

1. Before mulching **apply a pre-emergent herbicide** as specified above. See Subsection F above.
2. Use shredded bark or pine straw as a mulch. The mulch cannot contain any **trash or pine cones**.
3. Apply mulch in a **2" - 3" layer within two (2) days of planting**. Cover the entire groundcover/shrub bed or tree well with mulch.
4. Apply a **second application of herbicide** as specified above. See Subsection F.

#### H. Staking Trees:

See NC Cooperative Extension Service bulletin Planting Techniques for Trees and Shrubs for clarification of the following points. See *Figure 3*.

1. Trees less than 2" caliper and shrubs less than eight feet in height need not be staked.
2. Stake all trees 2" - 3" caliper using three (3) 1" x 2" x 18" minimum size wood stakes per tree. Use strapping or rope fed through a **rubber hose** at the trunk to prevent damage to the bark.
3. Stake all trees greater than 3" caliper using a minimum of 3 "Duck Bill" anchors or approved equal. Drive **anchors into undisturbed soil**. Use strapping or rope fed through a **rubber hose** at the trunk to prevent damage to the bark.
4. All staking must be removed no more than six (6) months after planting. No trees may be planted unless a provision is made in the landscape contract to remove stakes at the end of six (6) months.

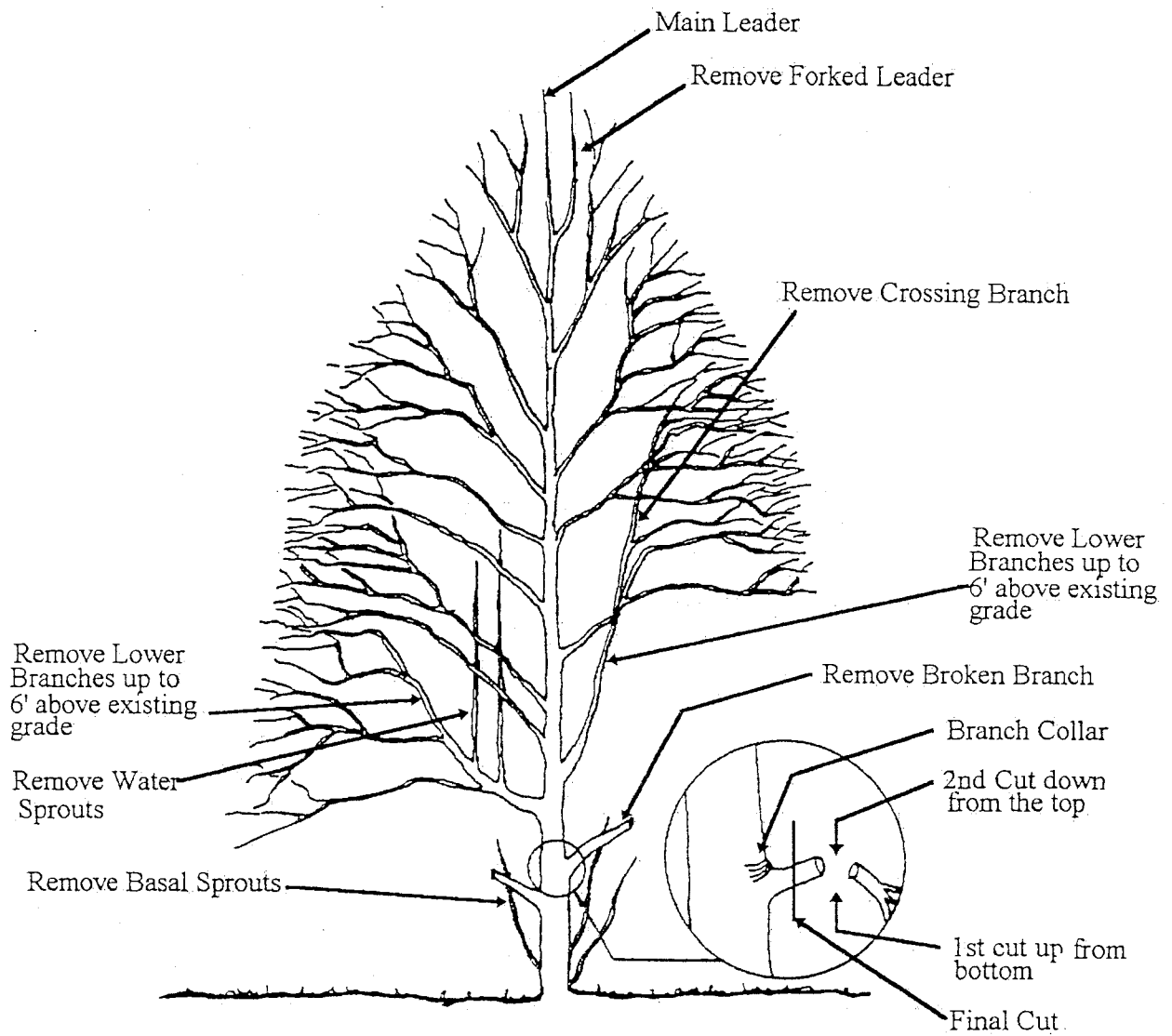


Figure 6: Pruning Diagram

## J. Pruning Techniques:

Refer to Figures 6 and 7 for further clarification of the points discussed below.

1. Use only clean, **sharp tools**.
2. When pruning large branches remove in three stages so the trunk is not torn. First **cut up from the bottom** of the branch several inches away from the trunk, then **cut down from the top** of the branch so the cuts meet. The third cut is close to the trunk but **outside the branch collar**.
3. Remove **basal sprouts** from the root crown or lower trunk. These sprouts sap needed growth energy from the tree, look messy, and create an area where trash often collects.
4. Remove **water sprouts**, those vertical sprouts which grow up through the middle of the tree or shrub.
5. Remove **crossing branches** which rub against other branches. The rubbing weakens the growth of both branches.
6. Remove any branches that were not taken back close to the trunk at the branch collar, or **temporary branches**.
7. Remove branches which grow at a **sharp angle to the trunk**. The sharp angle is a weak angle of attachment and can cause a weakened plant if it splits from the trunk, or can cause rot by giving water a place to collect.
8. Remove **parallel branches**, those branches which attach to the trunk one above the other within inches up the trunk.
9. Remove all branches **up to six (6) feet** above the ground.
10. Remove any branch **competing with the central leader**. If left on the tree it may cause the development of two leaders, and waste available growth energy. Later, as each leader gets larger, the fork may split and damage the tree.

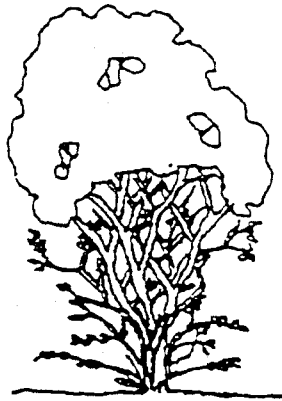
## K. Site Cleanup:

1. **Clean the work site at the end of each work day of all debris, containers, ball ties, wire baskets, rubbish, etc. Do not leave debris or rubbish on the site overnight.**

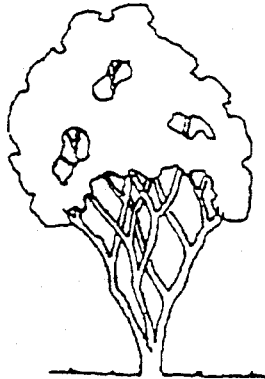
BEFORE PRUNING

CORRECT PRUNING

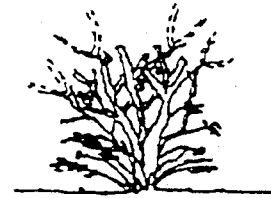
INCORRECT PRUNING



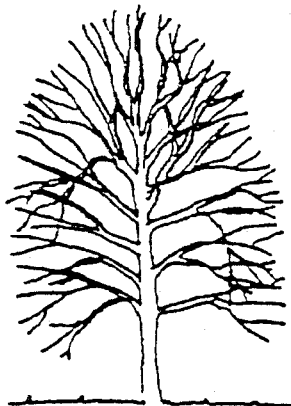
Multi-Stem Tree  
(Overgrown)



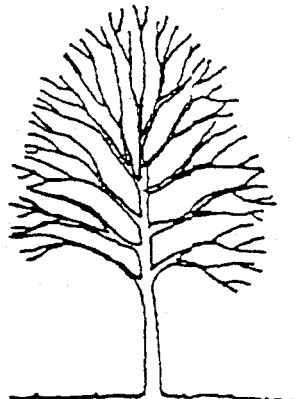
Prune to Maintain  
Tree Form



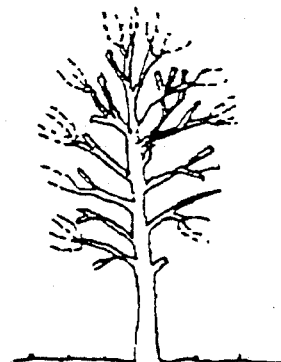
Do NOT Round-Over  
(Promotes Sprouts)



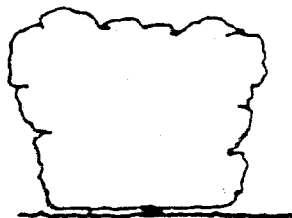
Single Stem Tree with  
Dense Crown, Dead  
Limbs or Low Branches



Prune Back to Trunk  
or to Next Largest Limb



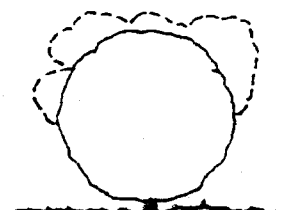
Do NOT Top or  
Stub Cut



Shrub (Poor Shape  
and Overgrown)



Remove Oldest Branches  
to Reshape. Prune Narrower  
on Top, Wider on Bottom.



Do NOT Round-Over  
(Kills lower Branches,  
Promotes Sprouts)

Figure 7: Pruning Guidelines

2. At the end of each work day thoroughly clean all paved areas by sweeping and/or washing so as to return the pavement to its **original condition**.

## V. Requirements for Successful Lawn Installation:

This section is compiled from information taken from two NC Cooperative Extension Service bulletins: Carolina Lawns, and Lawn Maintenance Calendar. Refer to these publications for clarification of the points contained in each subsection.

### A. Lawn Materials:

1. Supply all species or varieties, materials, products, and sizes specified in the **Approved Site Plan**.
2. Use a grass seed containing **97% minimum purity** and **85% minimum germination**, as certified by the North Carolina Co-op Improvement Association, and **free of noxious weed seeds**.
3. Use ground (**dolomitic**) limestone containing not less than 85% total carbonates as a source of lime. In the absence of a soil test apply lime at a rate of 75 lbs per 1,000 square feet.
4. Use a commercial fertilizer which has a minimum 50% **slow release nitrogen**, and a uniform composition.
5. Mulch the lawn with **clean** threshed wheat or oat **straw** from the latest harvest crop. This straw must be free of noxious weed seeds and foreign materials.
6. Use water **free** from oils, acids, alkalis, salts or any other substance **toxic or harmful to vegetation**.

### B. Turf Bed Preparation:

1. Prepare the soil and apply lime and fertilizer as specified in **Section IV, Subsections B and D**.
2. After proper soil preparation and fertilization, apply a **pre-emergent herbicide** and



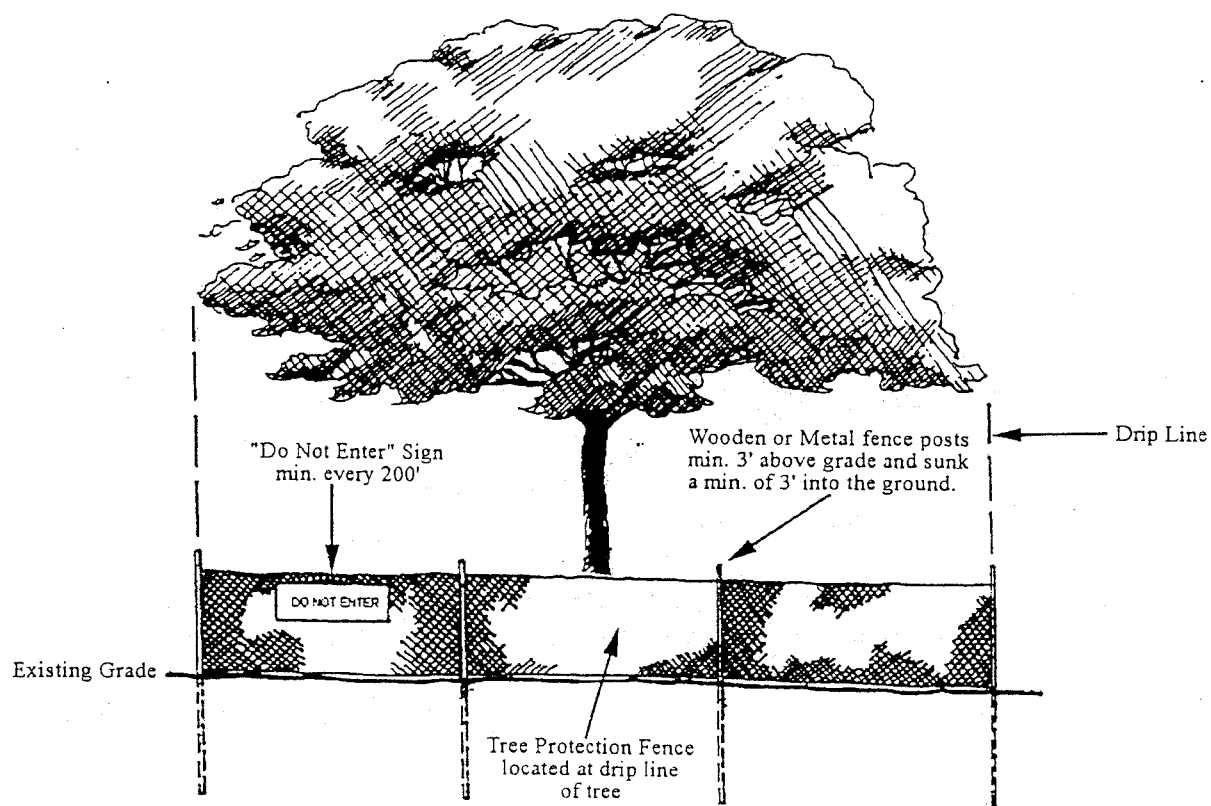


Figure 8: Tree Protection Fence Detail

**fertilizer combination** (Ronstar + 7-3-22 or approved equivalent); broadcast it at an application rate of 175 lbs per acre just before applying seed or planting sprigs or sod.

3. In the absence of a soil test for all grasses **except centipedegrass**, apply 75 lbs of ground limestone per 1,000 square feet. **Incorporate lime and fertilizer in the top 6" - 8" of the soil using a rototiller.**
4. Use a rake to create a smooth and level bed **free of hollows** and depressions, and with soil particles no larger than marble size. (**Pea gravel size** is even better).
5. **Water** to settle the soil, **and rake** again to break the crusty surface before seeding.

## **VI. Tree Preservation and Care During Construction:**

### **A. Tree Preservation:**

Refer to Figures 1 and 8 for further clarification of the following points.

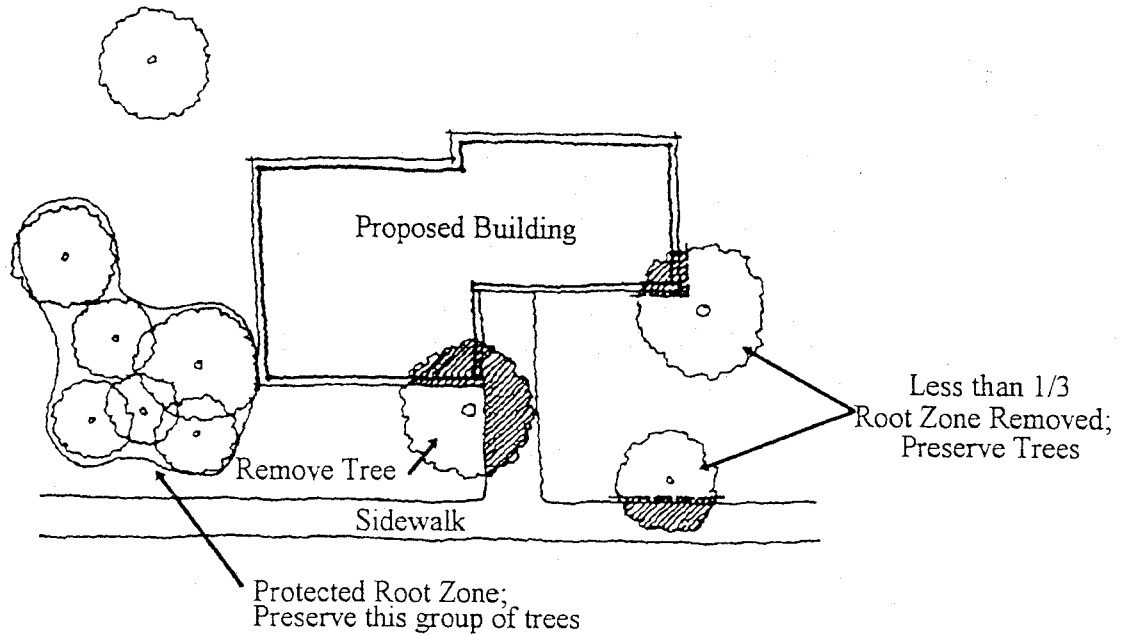
1. Mark the "**Tree Save Area**" with Tree Protection Fencing. *See Figure 8.*
2. The size of the "Tree Save Area" is either a **radius based on the trunk diameter or the area within the drip line**, whichever is **largest**. If using the tree's trunk diameter to determine the Tree Save Area enclose at least one **(1) foot of ground** measured from the trunk of the tree **for every one (1) inch of trunk diameter**. For example, if the diameter of an existing tree is eight (8) inches, the radius, measured from the trunk of the tree, of the Tree Save Area must be eight (8) feet; the diameter of the Tree Save Area is therefore sixteen (16) feet. However, the branches of an eight inch diameter tree could easily spread beyond eight feet from the trunk. If so, the Tree Save Area must extend at least as far as the branches forming the drip line. *See Figure 1.*
3. If installing tree protection fencing for trees along a wood's edge, locate the fence **at the drip line of the outermost trees.**
4. Install Tree Protection Fencing **before doing any grading or land disturbing activity.**

5. **Call the Planning Department (772-4688)** to request that the Urban Design Specialist visit the site to give approval of the placement of the fencing **before doing any other site work.**
6. Do not disturb the **Critical Root Zone (CRZ)** of any tree(s) in an area designated "Tree Save Area." In other words **do not clear, grub, trench, remove soil, backfill, drive or park vehicles, equipment or materials, dump trash, oil, paint or any material harmful to the health and growth of the tree** within the area marked by the drip line of any tree.
7. If authorized to clear within the CRZ, cut any trees or shrubs **flush with grade or grind the stumps** to a minimum twelve (12) inches below surrounding grade. Backfill any holes with clean, dry soil the same day. Moisten the soil. Seed or mulch the remaining area depending on which landscape treatments are stipulated on the plans.
8. The Urban Design Specialist **may** allow a Temporary Access (for 30 days only) across the "Tree Save Area." Get **permission in writing** from the Urban Design Specialist and keep a copy on the construction site at all times. Mulch the access across the Tree Save Area with a **minimum 6" layer of large wood chips.** **No material storage, however,** is allowed in the access area even on a temporary basis.
9. Some trees being saved may require root pruning. See **Subsection B 1 below** for specific guidelines on root pruning. *See Figure 9.*
10. Those trees requiring more than a third of their roots pruned/removed are unlikely to survive. Remove these trees. *See Figure 9.*

#### **B. Care During Construction:**

Refer to Figure 9 for further clarification of the points discussed below.

1. Root pruning may be done on existing trees located near proposed construction using the following guidelines:
  - a) Cut roots no more than **6" back from new construction**; cut to a depth of **two (2) feet only.**
  - b) Backfill with clean, dry soil **within hours** of root pruning. Moisten soil the **same day.**
  - c) Keep all tools **sharp** to ensure roots are not broken or torn.



**How do you decide which trees to preserve?** Existing trees can add character, beauty, and dollar value to a development. Some trees, however, are less likely to survive the construction process than others. A healthy tree standing alone prior to construction or a group of existing trees with sufficient root zone protection is the best choice for long-term survival following construction. Those trees with no more than one-third of their root zone disturbed by construction are likely to survive; those trees with greater than one-third of their root zone disturbed are not likely to survive and should be removed. Any trees with pre-existing pest or disease problems will probably decline rapidly due to the stress of construction and should be removed.

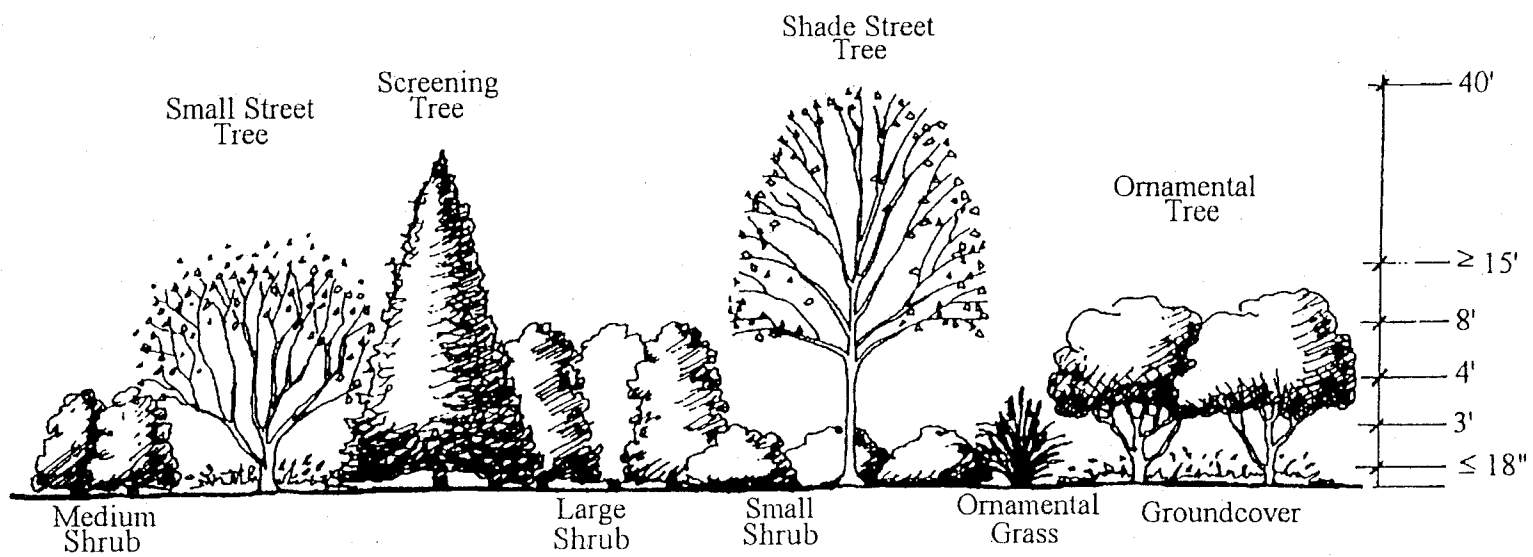
Figure 9: Care of Trees During Construction

2. Any clearing done **in the CRZ** may **only** be done **if specified** on the approved Site Plan or with **written permission** from the Urban Design Specialist, and cannot disturb the roots. Cut any trees or shrubs **flush with grade or use a stump grinder**.
3. Do not use **climbing irons, spurs or spikes** on trees when pruning them.

#### C. Site Clean Up:

1. **Remove all debris from the work site each day before the work crew leaves the site. Do not leave debris or rubbish on the site overnight.**
2. At the end of each work day thoroughly clean all areas, including paved areas, by raking or sweeping so as to return the site to its **original condition**.

Figure 10: Plant Categories



## REASONS FOR INCLUDING LARGE TREES IN THE LANDSCAPE.

### LARGE TREES:

- Create green spaces in the community.
- Establish a unifying element in a streetscape or corridor planting.
- Soften architectural elements.
- Provide taller buffers between incompatible land uses.
- Mitigate urban microclimates by providing shade and windbreaks and by filtering sound and pollution.
- Reduce soil erosion and excess storm water run-off.
- Contribute a living legacy to the community.

LARGE TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Acer rubrum</i> RED MAPLE	deciduous shade	40-60'	30-50'	fast	adaptable	spring flowers, fall color	leaf hoppers, borers	Many cultivars with brilliant fall color. Does not tolerate heavy pollution. Shade tolerant.
<i>Acer saccharum</i> SUGAR MAPLE	deciduous shade	60-75'	40-60'	moderate	well-drained slightly moist	fall color	leaf scorch	Beautiful fall color. Resents heat. Shade tolerant. Cultivars: "Green Mountain," "Legacy"
<i>Betula nigra</i> RIVER BIRCH	deciduous	40-70'	40-60'	fast	moist preferred, but adaptable	handsome form and bark	leaf spot	Multi- or single-stem. Handsome bark. 'Heritage' excellent selection
<i>Carpinus carolina</i> HORNBEAM, IRONWOOD	deciduous shade	20-50'	30-50'	slow to moderate	rich, moist, slightly acid; adaptable	fall color, smooth bark	canker, leaf spot	Very adaptable smaller shade tree. Unique smooth sinewy trunk. Shade tolerant.
<i>Cedrus deodara</i> DEODAR CEDAR	evergreen	40-70'	50-90'	moderate	well-drained, somewhat dry	foliage texture and color	cold damage, top dieback	Excellent, graceful specimen with soft blue-green color.
<i>Celtis laevigata</i> SOUTHERN HACKBERRY	deciduous shade	60-80'	60-80'	moderate to fast	prefers rich, moist, but tolerates dry or heavy; sun	sweet orange-red to blue-black fruit, adaptability	nipple-gall, leaf spots	Fruit is very sweet and juicy and relished by birds, excellent street tree because of tolerance to heavy soils and city pollution
<i>Cladrastis kentukea</i> YELLOWWOOD	deciduous shade	30-50'	40-55'	moderate	well-drained; full sun	fragrant spring flowers, bright foliage	very few	Beautiful fragrant flowers on older trees. Slow to develop strong form. Underused.
<i>Cryptomeria japonica</i> JAPANESE CEDAR	evergreen	50-60'	20-30'	moderate	rich, moist, acid; full sun	soft texture, beautiful bark	leaf blight, branch dieback	Graceful stately specimen. Excellent screen.

LARGE TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Fagus grandiflora</i> AMERICAN BEECH	deciduous shade	50-70'	50-70'	slow	moist, well-drained, acid	handsome form, bark, fall foliage	none serious, surface roots	Beautiful and grand native for large areas. Shallow roots inhibit grass.
<i>Fraxinus pennsylvanica</i> GREEN ASH	deciduous shade	50-60'	25-35'	fast	very adaptable, full sun	adaptability	borers, scale	Plant cultivars to prevent reseeding. Easily transplanted; variable growth habit.
<i>Gleditsia triacanthos</i> var. <i>inermis</i> THORNLESS HONEYLOCUST	deciduous shade	30-70'	30-50'	fast	moist to dry, even drought tolerant, adaptable; full sun	filtered shade, salt tolerant	leaf spot, borer, prone to webworm	Elegant filtered shade, overused. Could face serious disease problems as monoculture planting. Cultivars.
<i>Liquidambar styraciflua</i> var. <i>rotundiloba</i> SWEETGUM	deciduous shade	60-75'	40-50'	moderate	adaptable, needs large root zone	rich fall color; fruitless	numerous pests when under stress	Fruitless variety, but reversion possible. Rich fall color.
<i>Liriodendron tulipifera</i> TULIP POPLAR	deciduous shade	70-90'	35-50'	fast	moist, well-drained loamy, full sun	beautiful spring flowers, fall foliage	numerous when poorly sited	Majestic tree only for large sites. Needs well-drained, loamy soil to stay healthy.
<i>Magnolia grandiflora</i> SOUTHERN MAGNOLIA	evergreen	60-80'	30-50'	moderate	rich, well-drained shade tolerant	beautiful fragrant flowers; handsomely thick leaves	messy leaves, surface roots	Formal specimen, as screen or hedge. Use cultivars: 'Little Gem,' 'Margaret Davis,' etc if seeking narrow or smaller specimens.
<i>Metasequoia glyptostroboides</i> DAWN REDWOOD	deciduous	70-100'	25-45'	fast	moist, well-drained upland; slightly acid	bright green, fine-textured leaves	none serious, Japanese beetle	Tall but somewhat narrow; lovely ornamental well suited to parks, golf courses, large areas; effective in groups or lining driveways or streets.
<i>Nyssa sylvatica</i> BLACK GUM	deciduous	30-50'	20-30'	moderate	moist, well-drained acid	striking fall color	none serious	Beautiful native tree but hard to find in nurseries. Striking early fall color.
<i>Pinus taeda</i> LOBLOLLY PINE	evergreen	40-60'	20-30'	fast	adaptable to poorly drained, acid soil	good fast screen, adaptability	pine beetles	Fast screen when young; higher canopy with age. Beetles not frequent in landscape setting.



LARGE TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Platanus x acerifolia</i> LONDON PLANETREE	deciduous	70-100'	65-80'	moderate	prefers rich, moist well-drained, but adaptable	withstands heavy pruning, easily transplanted; good choice for open areas	canker stain fungus, lacebark, borer	Excellent for large areas; restrict use as street tree as it grows too large. Good uniformity of habit.
<i>Quercus alba</i> WHITE OAK	deciduous shade	50-80'	60-90'	slow	deep, moist, well-drained, acid	stately habit, fall color	numerous, but tree is survivor	Probably most majestic of trees. Slow growth, transplant problems restricts use but worthy choice where room and time.
<i>Quercus coccinea</i> SCARLET OAK	deciduous shade	70-75'	40-50'	moderate	adaptable	excellent glossy foliage, fall color	none serious; not as drought tolerant; not good street tree choice	Excellent foliage, attractive form makes this oak increasingly popular.
<i>Quercus palustris</i> PIN OAK	deciduous shade	60-70'	25-40'	fast	tolerant of wet roots, prefers rich moist well-drained	transplants easily, readily available; tolerant of city conditions	iron chlorosis	Strongly oval-pyramidal habit makes good street tree. Fall coloration is variable.
<i>Quercus phellos</i> WILLOW OAK	deciduous shade	40-60'	30-60'	moderate	adaptable	good form, fine texture	none serious	Highly adaptable and obtainable oak. Perhaps overused.
<i>Quercus rubra</i> RED OAK	Deciduous shade	60-75'	40-50'	fast	sandy loam, well-drained, acid	withstands city pollution, transplants easily	chlorosis in high pH soils	Excellent street tree in proper culture. Russet red to bright red fall color.
<i>Quercus shumardii</i> SHUMARD OAK	deciduous shade	40-60'	40-60'	moderate	adaptable	reliable, fall color	none serious; retains brown leaves thru winter	Reliable and adaptable. Becoming more available in the trade.
<i>Sophora japonica</i> PAGODA TREE	deciduous shade	50-75'	50-75'	fast	loamy, well-drained	fragrant showy flowers	canker, cold damage in youth	Some disease and hardiness problems when young. Otherwise good urban tree.
<i>Taxodium distichum</i> BALD CYPRESS	deciduous	50-70'	20-30'	moderate	adaptable, full sun	fine texture, attractive bark	twig blight, cypress moth, mites	Stately tree with finer texture than most. Looks at home near water but adaptable to city conditions.
<i>Tsuga canadensis</i> CANADIAN HEMLOCK	evergreen	40-70'	25-35'	moderate	moist, well-drained acid, sun or shade	fine texture; hedge, screen, groupings	numerous if not properly located	Excellent for naturalizing, screening, or large hedge. Reliable if given cultural care and not allowed to dry.

LARGE TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Ulmus parviflora</i> LACEBARK ELM	deciduous shade	40-50'	40-50'	moderate	adaptable	medium to fine texture, beautiful mottled bark	none serious	Tough and durable for urban sites. Easily transplanted and grown. Medium to fine texture.
<i>Zelkova serrata</i> JAPANESE ZELKOVA	Deciduous shade	50-80'	50-80'	moderate	moist, well-drained; sun	fine foliage, fall color, vase shape	none serious	Handsome tree with good foliage and vase shape. Good cultivar: 'Village Green.'

## REASONS FOR INCLUDING ORNAMENTAL TREES IN THE LANDSCAPE.

### ORNAMENTAL TREES:

- Provide an understory to the large trees which form the canopy.
- Create a screen or buffer for less desirable visual elements.
- Define or accent a focal space such as an entry area to a building, park, or plaza.
- Add dynamic visual interest to the environment, such as attractive bark, flowers, fragrance, and sculptural form.
- Mitigate urban microclimates by providing shade and windbreaks, and by filtering sound and pollution.
- Reduce soil erosion and excess storm water run-off.

ORNAMENTAL TREES	TREE TYPE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Acer grinnala</i> AMUR MAPLE	deciduous	15-20'	15-20'	moderate	adaptable, sun or light shade	fragrant flowers, fall color, early leaves	relatively few	Very hardy. Use as specimen, in groups, or in containers; tends towards multi-stem.
<i>Acer palmatum</i> JAPANESE MAPLE	deciduous	15-25'	15-25'	slow to moderate	moist, well-drained; sun/shade	excellent foliage, fall color, bark	few, leaf scorch	Beautiful specimen or accent. Many named varieties with red to green leaf color and varying leaf shape.
<i>Amelanchier arborea</i> SERVICEBERRY	deciduous	15-25'	10-30'	moderate	moist, well-drained; sun/shade	spring flowers, fall color, fruit, bark, wildlife	numerous: rust, leaf blight, fire blight, mildews	Excellent for naturalizing; edible fruit, attracts wildlife. Interesting winter habit.
<i>Cercis canadensis</i> REDBUD	deciduous	20-30'	25-35'	moderate	adaptable if not wet; sun/part shade	spring flowers, fall color, fruit	canker, leaf spot, Verticillium wilt	Handsome native tree used for naturalizing, as specimen, or in groups. New varieties offer new leaf and flower colors. Interesting form.
<i>Cornus florida</i> FLOWERING DOGWOOD	deciduous	20-30'	20-30'	moderate	well-drained, acid, organic, moist	spring "flowers" white or pink, fall color, fruit, form	borer, fungus, leaf spot	Despite problems, worth growing in proper cultural conditions. One of most ornamental of all natives. Cultivar: 'Cloud 9,' 'Galaxy'
<i>Cornus kousa</i> KOUSA DOGWOOD	deciduous	20-30'	20-30'	slow to moderate	well-drained, acid, sandy, organic	late spring "flowers," bark, fall color, fruit, form	borers, none serious	Handsome as specimen, softens harsh structures, beautiful in flower, fall color, and winter habit.

ORNAMENTAL TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Crataegus phaenopyrum</i> WASHINGTON HAWTHORN	deciduous	25-30'	20-25'	moderate	well-drained; full sun	spring flowers, showy fall fruit	numerous: fireblight, leaf spot, mildew, rust. 1-3" thorns	Fruit display makes excellent specimen or in groups. <i>C. viridis</i> 'Winter King' less rust-prone. Poor choice in areas where small children tend to play due to thorns.
<i>Halesia carolina</i> CAROLINA SILVERBELL	deciduous	30-40'	20-35'	moderate	well-drained, organic, moist, acid; sun/shade	spring flowers, fall fruit	very pest resistant	Subtly beautiful native, for shrub and woodland borders.
<i>Ilex opaca</i> AMERICAN HOLLY	evergreen	20-40'	18-40'	slow	well-drained, moist, acid; sun	evergreen leaves, red berries	numerous: leaf miner, scale, bud moth, blight	Picturesque specimen. Many superior cultivars: 'Greenleaf,' 'Howard.'
<i>Ilex</i> x cultivars HOLLY (large types)	evergreen	15-25'	15-25'	moderate to fast	well-drained, moist, acid; sun	glossy dark leaves, fall berries	none serious	Many large enough to be used as trees, screening. Popular: 'Nellie R. Stevens,' 'Fosteri,' 'Mary Nell,' 'Emily Brunner.'
<i>Koelreuteria paniculata</i> GOLDENRAINTREE	deciduous	30-40'	30-40'	moderate to fast	adaptable; full sun	spring leaves, summer flowers	none very serious	Lawn or patio tree unique for showy yellow summer flowers
<i>Lagerstroemia indica</i> (x <i>faurei</i> ) CRAPEMYRTLE	deciduous	18'+	20'-25'	fast	well-drained, warm; full sun	bark, form, showy summer flowers	powdery mildew, black spot, sooty mold	Excellent National Arboretum cultivars for flower, bark, fall color, and mildew/pest resistance.
<i>Magnolia x loebneri</i> LOEBNER MAGNOLIA	deciduous	20-30'	24-35'	moderate	well-drained, acid, moist, organic; sun	fragrant spring bloom, form	numerous possible but seldom	Spectacular early flowers susceptible to freeze but worth the risk overall.
<i>Magnolia x soulangiana</i> SAUCER MAGNOLIA	deciduous	20-30'	15-25'	moderate	well-drained, acid, moist, organic; sun	fragrant spring bloom, form	numerous possible but seldom	Spectacular early flowers susceptible to freeze but worth the risk overall.
<i>Magnolia virginiana</i> SWEETBAY MAGNOLIA	semi-evergreen	20-30'	25-35'	moderate	adaptable, tolerates wet; shade	fragrant summer bloom, fall fruit	none serious	Versatile tree with nice foliage, fragrant flowers, often multi-stem. Underused.
<i>Malus</i> hybrid FLOWERING CRABAPPLE	deciduous	15'-25'	15'-25'	adaptable but prefers heavy loam	well-drained, moist, acid; sun	showy spring bloom, fall fruit	numerous - use only resistant varieties	Many varieties available with different habits; bloom, leaf and fruit color. Select only disease resistant varieties.

ORNAMENTAL TREES	TYPE TREE	SIZE AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Oxydendrum arboreum</i> SOURWOOD	deciduous	25-30'	20-25'	slow	moist well-drained to dry soils; full sun to part shade	long white drooping blossoms in mid summer	leaf spot, twig blight not serious	Striking pendulous profuse white blooms, specimen second only to Dogwood. Pyramidal tree with rounded top and drooping branches; lovely outline.
<i>Parrotia persica</i> PERSIAN PARROTIA	deciduous	20-40'	15-30'	moderate	well-drained; sun or light shade	spring flowers, exfoliating bark	only Japanese beetle	Exceptional specimen, accent, small lawn or street tree. Underused.
<i>Pistacia chinensis</i> CHINESE PISTACHE	deciduous	30-35'	25-35'	moderate	adaptable; full sun	fall color, bark	none	Highly adaptable lawn, park, street tree with outstanding fall color. Underused.
<i>Prunus species</i> FLOWERING CHERRY	deciduous	15'-35'	15'-30'	moderate	well-drained, moist; sun	spring flowers, some weeping	numerous if poor conditions	Popular despite problems. Often used: <i>Prunus mume</i> , <i>P. x yedoensis</i> 'Okame,' <i>P. subhirtella pendula</i> .
<i>Sassafras albidum</i> SASSAFRAS	deciduous	30-60'	25-40'	moderate to fast	well-drained, moist, acid; sun/light shade	spring flowers, fall colors	numerous possible but seldom noticed	Overlooked native, excellent for naturalizing, road sides, spectacular fall color. Tea made from bark of roots.
<i>Stewartia pseudocamelia</i> JAPANESE STEWARTIA	deciduous	20-40'	15-30'	moderate	well-drained, moist, organic	summer flowers, bark, tree form	none serious	Magnificent specimen with Camellia-like flowers, stunning fall color, and beautiful bark.
<i>Styrax japonica</i> JAPANESE SNOWBELL	deciduous	20-30'	20-30'	moderate	well-drained, moist, organic	late spring flowers, fruit, form	mostly pest free, borers	Lovely graceful tree all seasons, cultivars available. Underused.
<i>Thuja occidentalis</i> 'Emerald' 'EMERALD' ARBORVITAE	evergreen	15-25'	5-10'	slow to moderate	well-drained, moist soil and air; sun	fine texture, foliage	bagworm, heart rot, red spider mite	Useful as specimen, accent, hedge, screen. Narrow pyramidal form. Very cold hardy.

## REASONS FOR INCLUDING SHRUBS IN THE LANDSCAPE:

### SHRUBS:

- Soften edges between architectural walls, fences, and other vertical elements and the ground plane.
- Define spaces, and direct pedestrian traffic.
- Help establish pedestrian scale.
- Provide eye level screening for less attractive site elements.
- Reduce soil erosion and excess storm water run-off.
- Add texture, color, and variety to the built environment.

SHRUBS	TREE TYPE	AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Abelia grandiflora</i> GLOSSY ABELIA	evergreen small to medium	3-6'	3-6'	moderate to fast	easily grown; moist, well-drained; sun	flowers June to frost	none serious	For mass or hedge; 'Sherwood' more dense and compact; x 'Edward Goucher' darker pink flowers.
<i>Aronia arbutifolia</i> RED CHOKEBERRY	deciduous medium	6-10'	4-6'	moderate	adaptable to wide range of soils; sun to part shade	spring flowers, fall color, red "berries"	none serious: leaf spots, powdery mildew	Border, massing, groups, naturalizing brilliant fruit. Superior cultivar: 'Brilliantissima.'
<i>Berberis julianae</i> WINTERGREEN BARBERRY	evergreen medium	6-10'	6-10'	moderate	adaptable to wide range of soils; sun	yellow spring flowers, fall color, fruit	thorns	Impenetrable hedge, improper pruning can ruin form. Cultivars: 'nana' and 'Glory' are good but hard to find.
<i>Berberis thunbergii</i> JAPANESE BARBERRY	deciduous small to medium	3-6'	4-7'	moderate	adaptable to soils but not too wet; sun	leaf colors, winter fruit	numerous possible, but none prevalent	Many cultivars: 'Crimson Pygmy' and 'Rose Glow' have burgundy foliage; 'aurea' bright yellow-green.
<i>Buddleia davidii</i> BUTTERFLY BUSH	deciduous medium to large	5-15'	8-12'	fast	adaptable, not too wet; sun	foliage color, profuse summer blooms	none serious	Many cultivars of varied sizes, foliage, bloom color: 'Black Knight,' 'Dubonnet,' 'Nanho,' 'Petite Plum,' etc. Best used in groupings. Cut back to the ground late fall/winter.
<i>Callicarpa dictoma</i> PURPLE BEAUTYBERRY	deciduous small to medium	3-5'	4-6'	moderate	adaptable, well- drained; sun/part shade	graceful form, spectacular fall berries	none serious	Used in mass, few can compete with effect of this shrub in fruit. Purple and white fruiting types.

SHRUBS	TREE TYPE	AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Camellia japonica</i> , <i>C. sasanqua</i> CAMELLIA	evergreen medium to large	10-15' 6-10'	6-10' 5-8'	slow to moderate	moist, well-drained, organic; part shade	handsome foliage, fall, winter or spring bloom	numerous possible in improper soils	Many cultivars: select for cold hardiness, bloom time and color. Use for accent, screening, espalier.
<i>Chamaecyparis pisifera</i> cultivar JAPANESE FALSECYPRESS	evergreen medium to large	4-15' size varies with cultivar	4-10'	moderate	moist, well-drained, humid; sun	fine texture, foliage color in cultivars	leaf scorch, none serious	Accent or specimen. Cultivars with gold or bluish leaf: 'Filifera,' 'Filifera Aurea,' 'Gold Mop,' 'Boulevard.'
<i>Chionanthus virginicus</i> FRINGETREE	deciduous medium to large	12-20'	12-20'	slow	deep, moist, fertile, acid soils; sun to part shade	outstanding fringe-like white flower; pollution tolerant	none serious	Outline is spreading and rounded, fine textured in flower May to June. One of more handsome native plants in flower.
<i>Clethra alnifolia</i> SUMMERSWEET CLETHRA	deciduous medium	3-8'	4-6'	moderate	acid, organic, tolerates wet; sun/shade	summer blooms very fragrant, fall color	none serious	Underused plant for massing, naturalizing. Extremely fragrant bloom. Tolerates wet, shady sites.
<i>Cotinus coggygria</i> SMOKETREE	deciduous medium to large	10-15'	10-15'	moderate	readily transplanted, adaptable to wide range soils; most showy in full sun	hairs of flowers very showy June through August; purple-leaf varieties.	None serious	Good in shrub border, grouping, massing, better than as specimen. Purple cultivars have striking maroon to purplish red foliage.
<i>Cotoneaster dammeri</i> BEARBERRY COTONEASTER	semi-evergreen to evergreen	1-1 ½' x 6'+		fast	adaptable but prefers well- drained soils	easiest cotoneaster to grow, roots where branches touch the ground	aphids, occasionally fireblight	Excellent on banks as display and erosion control, facing shrubs, foundation, and possible espalier
<i>Euonymus alatus</i> WINGED EUONYMUS	deciduous large to medium	15-20' 5-10' (compact form)	15-20'	moderate	adaptable, but not too wet; sun/shade	form, fall color, fruit, winter stems	none serious	Excellent as specimen, massing screening. Brilliant fall color. Most popular: 'Compactus.'

SHRUBS	TREE TYPE	AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Forsythia x intermedia</i> FORSYTHIA	deciduous medium to large	8-12'	10-12'	fast	adaptable; sun to part shade	early spring flowers	several but not particularly serious	Shrub border, massing, groups, bank plantings. Needs plenty of space to limit pruning.
<i>Hamamelis x intermedia</i> WITCH H HAZEL HYBRID	deciduous large	10-20'	10-15'	moderate	moist, well-drained; sun/shade	fragrant winter blooms, fall color	none serious	Specimen, groups, shrub border, naturalizing. Underused native shrub with winter interest. Many cultivars.
<i>Hydrangea</i> species HYDRANGEA	deciduous medium to large	4-15' size varies with species	4-15'	fast	moist, well-drained, salt tolerant	large summer blooms, fall color, 'Oak Leaf'	several possible, none prevalent	Accent groups. All species showy in flower; color varies. 'Oak Leaf' also has good fall color and winter form.
<i>Ilex crenata</i> cultivars JAPANESE HOLLY	evergreen small, medium, large	4-12' size varies with cultivar	4-12'	moderate	moist, well-drained, no drought; sun	evergreen leaf, texture	spider mites, black knot, nematodes	Workhorse plants for foundation, hedge, mass; most serviceable 'Helleri,' 'Compacta,' 'Steeds.'
<i>Ilex cornuta</i> cultivars CHINESE HOLLY	evergreen small, medium, large	3-15' size varies with cultivar	4-15'	moderate	adaptable, drought tolerant; sun	broad glossy leaf, berries on some cultivars	scale, numerous possible, varies with cultivar	Accent, foundation, screen, hedge. Many cultivars widely used: 'Burfordii,' 'Carissa,' 'Rotunda.'
<i>Ilex glabra</i> INKBERRY HOLLY	evergreen medium	5-10'	5-10'	moderate	moist, acid; sun/shade	lustrous leaves, adaptability	none serious	Accent, foundation, screen, hedge, mass. Select named cultivars for size and form: 'Nordic,' 'Shamrock.'
<i>Ilex vomitoria</i> YAUPON HOLLY	evergreen small, medium, large	3-20' size varies with cultivar	5-15'	moderate to fast	adaptable to wet or dry, salt tolerant	great adaptability, varied forms, bark	none serious	Accent, foundation, screen, hedge, mass. Some small trees. Some dwarf and compact: 'Shillings.' Some weeping.
<i>Ilex verticillata</i> WINTERBERRY	deciduous medium	6-10'	6-10'	slow to moderate	adaptable, tolerates wet; sun to part shade	red fall to winter fruit	none serious	Mass, border, bank plantings, water's edge or wet soils. Needs male to set fruit. Spectacular in winter.
<i>Illicium parviflorum</i> ANISE-TREE	evergreen large	8-15'	10-15'	moderate	adaptable wet to dry; sun to shade	Handsome olive-green foliage	none serious	Large foliage mass or screen. Prune for specimen small tree. Foliage offers nice color contrast to dark greens.



SHRUBS	TREE TYPE	AT MATURITY		GROWTH RATE	SITE CONDITIONS	BENEFITS	POSSIBLE PROBLEMS	REMARKS
		HEIGHT	SPREAD					
<i>Itea virginica</i> VIRGINIA SWEETSPIRE	deciduous medium	3-7'	5-10'	moderate to fast	adaptable, prefers moist; sun to shade	fragrant May blooms, white drooping plumes, good foliage	none serious	Massing, banks, naturalizing. Highly adaptable native. Spreads by runner. 'Henry's Garnet' good for brilliant fall color.
<i>Juniperus cultivars</i> JUNIPER	evergreen small, medium, large	1-20'+ size varies with cultivar	1-10'+	moderate	tolerant of poor soils, no wet soils	needle-like foliage, fine texture	twig blight, rust, wilt, bagworm, mites	Groundcover, foundation, bank, hedge, screen, specimen. Sizes, shapes, colors vary with cultivar.
<i>Ligustrum japonicum</i> JAPANESE PRIVET	evergreen large	8-15'	8-12'	fast	adaptable, salt tolerant, no wet soils; sun to shade	lustrous dark green leaves	none serious	Foundation, screen, hedge, topiary, can be pruned into small tree. Cultivars.
<i>Myrica cerifera</i> WAX MYRTLE	evergreen large	10-20'	10-20'	fast	adaptable, salt tolerant; sun to shade	adaptability, fragrant stems and leaves	anthracnose, none serious	Versatile as screen, mass, hedge, small tree specimen. Ice may break limbs, but shrub recovers quickly.
<i>Nandina domestica</i> NANDINA	evergreen small to medium	2-8' size varies with cultivar	3-8'	moderate	adaptable; sun to shade	spectacular fruit, winter color	none serious	Species effective in groups, as hedge. Cultivars mostly dwarf types with varied leaf color: 'Harbor Dwarf' best.
<i>Osmanthus x fortunei</i> FORTUNE'S OSMANTHUS	evergreen large	15-20'	15-20'	slow to moderate	moist, well-drained; sun to shade	fragrant flowers in fall, handsome foliage	none serious	Border, screen, hedge, formal specimen. Fall fragrance.

Town of Garner  
PLANNING DEPARTMENT

## Landscape/Appearance Inspection Report

Permit # \_\_\_\_\_

Site Name/Address: \_\_\_\_\_

Contact Person: \_\_\_\_\_ Ph # \_\_\_\_\_ Fx # \_\_\_\_\_

Inspected by: \_\_\_\_\_ Date: \_\_\_\_\_ Report/Letter Sent On: \_\_\_\_\_

### CONDITIONS OBSERVED/CORRECTIVE ACTION REQUIRED:

#### Landscaping:

- ☐ Install wheel stops a minimum of 2.5' from edge of plant bed or sidewalks less than 5' wide.
- ☐ Did not follow acceptable plant bed preparation.
- ☐ Did not follow acceptable planting standards.
- ☐ Did not follow acceptable pruning standards.
- ☐ Replace trees/shrubs/groundcovers which are dead or have been removed.
- ☐ Trees/shrubs at installation do not meet ANSI standards for nursery stock.
- ☐ Planting does not comply with approved Site Plan. Date of approved Site Plan: \_\_\_\_\_
- ☐ Trees/shrubs planted too close to power line/SO/utilities.
- ☐ Remove stakes/guy wires/rubber hose/tree wrap.
- ☐ Soil well must be min. 3" above grade and placed beyond outer edge of rootball.
- ☐ Dumpster/HVAC units inadequately screened from view from public right-of-way.

#### Parking/Pavement:

- ☐ Sidewalks not as shown on the approved Site Plan. Date of approved Site Plan: \_\_\_\_\_
- ☐ Not enough parking spaces/stop signs; no handicap accessible spaces/ramps.
- ☐ Not paved as shown on the approved Site Plan. Date of approved Site Plan: \_\_\_\_\_

#### Signage:

- ☐ Does not comply with approved Sign Permit/Master Sign Plan. Date of SP/MSP: \_\_\_\_\_
- ☐ Landscape bed for the monument sign is not installed.

#### Lighting/Elevations:

- ☐ Does not comply with approved Site Plan. Date of approved Site Plan: \_\_\_\_\_

Other: \_\_\_\_\_

### ACTION TAKEN BY PLANNING STAFF:

- ☐ Site (not) approved for CO. Initials: \_\_\_\_\_ Date: \_\_\_\_\_
- ☐ Site approved for Conditional CO. Initials: \_\_\_\_\_ Date: \_\_\_\_\_
- ☐ 1-Yr Inspection Date: \_\_\_\_\_ Pass: \_\_\_\_\_ Fail: \_\_\_\_\_

**Conditions must be corrected immediately. Call \_\_\_\_\_ at 772-4688 upon receipt of this notice to establish a submittal date for a Plan of Action. Violation proceedings will be initiated if no Plan of Action is submitted or response to this report received by \_\_\_\_/\_\_\_\_/\_\_\_\_.**

- ☐ Plan of Action Received On: \_\_\_\_\_ Acceptable: \_\_\_\_\_

## IX. RESOURCE LIST:

### **Publications, cost, and where to get them:**

American Standard for Nursery Stock. \$15.00, plus \$2.50 postage and handling. North Carolina Association of Nurserymen, 7419 East US 64 Highway, Knightdale, NC (919) 266-3322

Carolina Lawns. FREE. NC Cooperative Extension Service, 1911 Building, NCSU campus. (919) 515-2811.

Fertilizer Recommendations and Techniques to Maintain Landscapes and Protect Water Quality. FREE. NC Cooperative Extension Service, 1911 Building, NCSU campus. (919) 515-2811.

Lawn Maintenance Calendar (for Fescue, Bermudagrass, Centipedegrass, etc.). FREE. NC Cooperative Extension Service, 1911 Building, NCSU campus. (919) 515-2811.

Planting Techniques for Trees and Shrubs. FREE. NC Cooperative Extension Service, 1911 Building, NCSU campus. (919) 515-2811.

Soil Sampling for Lawns & Gardens. FREE. NCDA Agronomic Division, Soil Testing Section, 4300 Reedy Creek Road, Raleigh NC (919) 733-2655.

Understanding the Soil Report. FREE. NCDA Agronomic Division, Soil Testing Section, 4300 Reedy Creek Road, Raleigh NC (919) 733-2655.

Wise Water Use in Landscaping. FREE. NC Cooperative Extension Service, 1911 Building, NCSU campus. (919) 515-2811.

### **Organizations, Contact Persons, Title, and Phone Number:**

Agricultural Resources Center (ARC). Erick Umstead, Research Director. (919) 839-0159. An excellent resource for questions/concerns about the proper use of pesticides.

Horticulture Extension Service at NCSU. Kim Powell, Extension Agent. (919) 515-1197. An excellent resource for all questions/concerns to do with horticulture.

Master Gardner Program with Wake County Extension Service. Carl Matyac, Master Gardener. (919) 250-1084. An excellent resource for questions about gardening practices/techniques.

NC Landscape Contractors Association Inc. Bill Wilder, President. (919) 266-1777. An excellent resource for information on state certification as a Landscape Contractor, and for study guides for the certification exam.

NC Department of Agriculture. Jim Burnette, Assistant Administrator. (919) 733-3556. An excellent resource for clarification of pesticide regulations.

Soils Extension Service at NCSU. (919) 515-3285. An excellent resource for questions/ concerns about turf management.

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